

designs will be described so that the various devices shown may be applied to a wide range of work.

It is well to state that in connection with the application of the floating principle, the greatest care must be used in the design in order to make sure that it is correctly applied, as it is quite possible to obtain a "float" in some portion of a device or tool, which, being of faulty construction, will not produce the results desired,

Important Points in the Application of the Floating Principle, — In order to obtain the most satisfactory results in its application, a few points are here noted which are worthy of attention.

1. As applied to clamping or holding methods, the greatest care must be used in order to make sure that the floating action is not constrained in any one direction, but will operate equally well and with uniform pressure on the required area. Frictional resistance may at times be sufficient in cases of this kind to cause imperfect work by reason of unequal pressures on the work itself. When the clamping action is applied to a rough surface, still greater care must be used in this regard, and the amount of float must be so proportioned that it will take care of a considerable variation in the castings or forgings. When a great number of pieces are to be handled, several patterns are often used and these will be found to vary somewhat so that there are slight differences in the resulting castings. For this reason, a allowance must be made,
2. When applied to methods of locating the work, or as supporting points on which it rests, the construction must be such that it will not by any possibility cause distortion. If springs are used under supporting plugs which are afterward

to be locked in position, the springs must be proportioned so that they will not be strong enough to cause any trouble by forcing the piece out of its true position. Also when supports are placed against finished surfaces they should be so arranged that they will not injure them. In locating a piece of work from two previously machined surfaces which are in different planes, the float-action must be very carefully studied, so that the contacts are positively assured, and no tilting of the work will